ERIC Document Resume	See Instruction Sheet	DATE OF RESUME 6/25/65	DATE RECEIVED

A. PUBLICATION DATA

1. ERIC NUMBER	2. ORIGINATOR CONTROL NO(S).	3. IDENTIFICATION NO.	DO NOT WRITE IN SPACE BELOW
ED000159	7497	N.A.	

4. AUTHOR(S):
Thistlethwaite, Donald L.

5. TITLE OF DOCUMENT ABSTRACTED:
Scholarships and the College-Going Behavior of Talented Students

6. PUBLICATION TITLE:
College and University

MICROFILM COPY AVAILABLE YES [X] NO [ ]

COPYRIGHT GRANTED YES [ ] NO [X]

COPYRIGHT RELEASE FILED YES [ ] NO [ ]

TYPE OF REPORT
PROPOSAL [ ]
IN-PROGRESS [ ]
FINAL [X]
FOLLOW-UP [ ]

OTHER ERIC REFERENCES:

7. EDITOR(S):
N.A.

8. PLACE OF ORIGIN
ORG. National Merit Scholarship Corp.
ST. 1580 Sherman Ave.
CITY STATE Evanston, Ill.
TELE. EXT.
INST/LOC CODE

9. PUBLISHER OR SOURCE
National Merit Scholarship Corp.

10. VOL.	11. PAGES	12. MO./YR.	13. TOTAL PP.
N.A.	65-73	Fall 58	9

ERIC SATELLITE CODE

B. INDEXING DATA

14. SUBJECT AREA

15. TYPE OF ENDEAVOR
experimental study

16. INDEXING TERMS (6-12)

experimental studies	behavior	specialization		
students	financial aid	aspirations		
talent	goals			

17. ABSTRACT (MAX. 250 WORDS)

This study was based on questionnaires completed by 536 winners of scholarship awards in the 1956 National Merit Scholarship program. The sample represents approximately 98 percent of the first group of scholars completing their freshman year in college. The report presents appraisals of the students on the effect of the scholarships on their vocational, educational, and life goals and on their choice of college. The report includes findings on changes made by the scholars in major fields of study during the freshman year—changes which may or may not be a result of scholarship assistance. About 3 out of every 10 scholars reported that they shifted their probable major field of study after starting college.

ERIC No.

18. SOURCE OF ABSTRACT

C. FUNDING DATA

19. SUPPORTING ORGANIZATION	20. DIVISION OR DEPT.	21. CONTRACT NO. / PROJECT NO.
	22. TOTAL COST OF PROJECT	
	23. DURATION OR PROJECT	U.S. Department of Health, Education, and Welfare Office of Education

ERIC Form 1

U. S. DEPARTMENT OF HEALTH, EDUCATION AND WELFARE
Office of Education

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Scholarships and the College-Going Behavior of Talented Students*

DONALD L. THISTLETHWAITE

THERE is considerable survey evidence which suggests that financial barriers prevent a large number of our youth from going to college. The percentage of high-ability who report they cannot go because of a lack of finances appears to vary with geographical region and with the level of ability considered. In 1947 Phearman (6) reported that among the top quartile of Iowa's high ability youth 32 per cent of those who did not go to college checked as their reason, "My parents could not afford to send me to college." Cole (3, p. 71) cited Steelman (7, pp. 26, 145) as reporting that the corresponding percentage in Ohio was 40 while the comparable figure in Indiana was 50 per cent. More recently the National Science Foundation supported a survey of college-going plans conducted by the College Entrance Examination Board. The survey (3) included 32,750 students from a nation-wide sample of high school students. Among students in the top 30 per cent of the ability continuum, 46 per cent of the boys and 50 per cent of the girls not planning to go to college mentioned as one of their reasons, "It would cost more than my family can afford." These figures agree roughly with Berdie's (2), derived from high-ability students in the top-scoring 19 per cent of Minnesota students on the American Council on Education Psychoiogical Examination. Among the high-ability students planning to get jobs instead of going to college 58 per cent said they would attend college if they had more money. Goetsch and Barber previously reported somewhat smaller percentages of "financial drop-outs" among students in a more highly restricted range of talent (the top 15 per cent of the I. Q. distribution): about 42 per cent of Goetsch's Milwaukee students who reported they were not going to college full time approximately ten months after high school graduation said they would be interested in full-time schooling if a complete scholarship were available (5); 36 per cent of Barber's (1) Erie, Pennsylvania students who did not enter college were adjudged on the basis of interview responses as having as their most important reason a lack of finances.

* This study was partially supported by the National Science Foundation and the Old Dominion Foundation.

Survey studies vary somewhat, then, in the estimated percentage of students who are lost to higher education because of financial reasons. But, taken at face value, they all suggest that scholarship awards to talented high school seniors can markedly increase college attendance.

Data for evaluating this hypothesis, and a number of related hypotheses about the effects of scholarships, were collected in the execution of the National Merit Scholarship program. This paper is in the nature of a preliminary evaluation of the effects of scholarship assistance upon the first group of recipients. First, talented students' appraisals of the effects of scholarship assistance are analyzed. Secondly, changes in the major field of study during the freshman year in college are discussed since such changes may reflect some of the attendant effects of scholarships.

METHOD

The study is based upon a questionnaire completed by Merit Scholars at the end of their freshman year. The population studied consists of the winners of scholarship awards in the 1956 National Merit Scholarship program in which 58,000 high school seniors participated. The winners were selected primarily on the basis of competitive aptitude tests, and represent the top one or two per cent of the nation's high school graduates. Merit Scholars are enrolled at 160 different colleges and universities throughout the country. The awards to these students varied from $100 to $2,200 a year; the average stipend was $630. Approximately 34 per cent of the students required no financial help; to these the minimum award of $100 a year was granted.

STUDENT EVALUATIONS OF EFFECTS OF MERIT SCHOLARSHIPS

Two considerations should be kept in mind in interpreting the following results. First, it will be noted that these estimates are based on questionnaire responses. Some students who have been enabled to attend college by the scholarship may unduly minimize its importance or may actually not know what the consequences of not receiving assistance would have been. Secondly, one out of every three of these Scholars received the minimum award of $100; one would not expect such small stipends to affect materially the decision to enter college.

Perceived values of the award. When asked to describe the chief

TABLE I

RESPONSES TO, "IN YOUR OPINION WHAT HAVE BEEN THE CHIEF VALUES OF YOUR MERIT SCHOLARSHIP TO YOU?"

Content of Reply	N	Per Cent*
Relief from financial burdens	154	29
Increased sense of dedication	89	17
Prestige and honor	121	23
Freedom to attend preferred or better college	133	25
Increased self-confidence	72	13
Made college attendance possible	12	2
Made possible attending away-from-home college	7	1

* Based on responses of 536 Merit Scholars. One of the original 556 recipients declined his scholarship and six of those appointed have since resigned theirs. The present sample represents approximately 98 per cent of the first group of Scholars completing their freshman year. In this and some succeeding tables, percentages do not add to 100 because some respondents gave replies classifiable in more than one category.

values of the scholarship about three out of ten mention relief from financial burdens to themselves or their parents. Seventeen per cent of the scholars report an added sense of responsibility or dedication. Another quarter report that the prestige and honor of the award were major values. Similarly one-fourth of the Scholars regard the freedom to attend a better or preferred college of major importance. A sizeable proportion (13 per cent) mention increased self-confidence as an important by-product (Table I).

Effects on vocational goals. Each student was also asked to estimate the effect of the Merit Scholarship upon his vocational, educational, and life goals. About a third of the Scholars believe it had little or no effect. One out of seven believes that receiving a scholarship caused them to raise or at least change their vocational goals. A sizeable number (7 per cent) do not think they would have been as highly motivated in their studies had they not won Merit Scholarships. Three per cent say not getting aid would have delayed their college education; another two per cent report they probably would not have attended college otherwise (Table II).

Choice of College. More than half of the Scholars believe their scholarship enabled or encouraged them to go to a more desirable college; 44 per cent do not believe it had this effect (Table III). Apparently some students feel they were "encouraged" but not "enabled" to go to a more desirable college, for only 35 per cent report they probably would be attending a different institution if they had not received a Merit Scholarship. Only 2 per cent volunteered the in-

TABLE II

RESPONSES TO, "IF YOU HAD NOT WON A MERIT SCHOLARSHIP, IN WHAT WAY WOULD YOUR VOCATIONAL, EDUCATIONAL, OR LIFE GOALS HAVE BEEN AFFECTED?"

Content of Reply	N	Per Cent
No effect (little, probably none)	194	36
Raised or changed vocational goals	77	14
Goals would have been more difficult to attain	60	11
Would not have been as highly motivated	36	7
Would have attended poorer (nonpreferred) college	40	7
Would have had less balanced, more specialized curriculum	19	4
Would have delayed college education	15	3
Probably would not have attended college	12	2
Undecided	33	6

formation that they might not be attending college were it not for the award. The award apparently had a much greater effect upon college choice than upon the decision to enter or not enter college (Table IV).

Has the concentration of talented students at certain universities been increased by Merit Scholarships? A partial, but by no means definitive, answer can be obtained by comparing the actual distribution of 1956 Scholars at the 13 most popular institutions (i.e., most popular among the responding 536 Scholars) with the distribution of college choices *as it would have been if the award had not been made.* The latter can be estimated by replies to the question, "If you had not received a Merit Scholarship, what college would you probably be attending this year?" The results in Table V clearly suggest that concentration of highly talented students at the 13 selected colleges has been increased by Merit Scholarships. Forty-six per cent of the Scholars in this analysis are attending one of the "popular" institutions.

TABLE III

RESPONSES TO, "HAS THE MERIT SCHOLARSHIP ENABLED OR ENCOURAGED YOU TO GO TO WHAT YOU REGARD AS A MORE DESIRABLE COLLEGE?"

Content of Reply	N	Per Cent
Yes	282	53
No	235	44
No response	18	3
Don't know	1	—

TABLE IV

RESPONSES TO, "IF YOU HAD NOT RECEIVED A MERIT SCHOLARSHIP, WHAT COLLEGE WOULD YOU PROBABLY BE ATTENDING THIS YEAR?"

Content of Reply	N	Per Cent
Same institution	323	60
Different institution	188	35
None or perhaps none	12	2
Don't know	13	2

However, according to the students' reports, only 29 per cent would be going to one of these colleges if they had not received a Merit Scholarship. The difference between these two percentages could not have occurred by chance ($p < .001$). It appears that Merit Scholarships have increased the concentration of talented students at a relatively small number of institutions. This effect, if indeed it is an effect of the scholarship program, needs to be studied more sys-

TABLE V

COMPARISON OF COLLEGE CHOICE UNDER REAL AND IMAGINARY CONDITIONS

College	Per Cent Selecting the Given Institution*		Diff.
	Actual college choices of 536 Merit Scholars	Choices Scholars would have made if they had not received a scholarship	
California Institute of Technology	3.2 (17)	1.5 (8)	1.7
Chicago, University of	1.9 (10)	1.3 (7)	.6
Cornell University	3.5 (19)	3.9 (21)	−.4
Duke University	2.4 (13)	1.7 (9)	.7
Harvard College	10.1 (54)	6.3 (34)	3.8
Massachusetts Institute of Technology	6.7 (36)	2.6 (14)	4.1
University of Michigan	1.7 (9)	1.9 (10)	−.2
Princeton University	3.0 (16)	1.7 (9)	1.3
Radcliffe College	2.6 (14)	.7 (4)	1.9
Rice Institute	2.6 (14)	2.8 (15)	−.2
Stanford University	2.6 (14)	1.1 (6)	1.5
Swarthmore College	2.8 (15)	1.5 (8)	1.3
Yale University	3.0 (16)	1.9 (10)	1.1
Any of the 13 most "popular" colleges	46.1 (247)	28.9 (155)	17.2

* N's are listed in parentheses.

tematically and related to size of stipend and to the motivational attributes of Scholars.

CHANGES IN STUDY PLANS OF TALENTED STUDENTS

An important incidental result, which may or may not be an "effect" of scholarship assistance, concerns changes in major fields of study during the freshman year. About three out of every ten Scholars report they have shifted their probable major field of study since they started college. There appear to be rather clear-cut trends exhibited by Scholars to shift from science to nonscience and from applied to nonapplied fields. These trends, if confirmed on subsequent samples of talented youth, may be of considerable interest to persons concerned with the supply of scientific personnel.

Table VI shows that the percentage of Merit Scholars in science has decreased from 72 per cent at the beginning of college to only 65 per cent at the end of the freshman year. The difference of approximately 7 per cent is statistically significant at a high level of confidence: there is less than one chance in a thousand of such a difference occurring by chance. Very clearly Merit Scholars tend to shift away from science during the freshman year in college.

Another striking aspect of the changes in study plans is the tendency to move away from applied fields of study. About one out of every four of the "changers" are leaving applied fields of study, whereas only about 9 per cent are moving in the opposite direction. Table VII shows that the per cent majoring in applied fields of study dropped from 39 to 34.5 per cent. This decrease is statistically significant: we would expect such a difference to occur less than one

TABLE VI

SCIENCE AND NONSCIENCE STUDY PREFERENCES AMONG MERIT SCHOLARS AT BEGINNING AND END OF FRESHMAN YEAR

Major Field of Study	Preference at			
	Beginning of College		End of Freshman Year	
	N	Per Cent	N	Per Cent
Science	387	72.2	350	65.3
Nonscience	135	25.2	155	28.9
Undecided	14	2.6	31	5.8
Totals	536	100.0	536	100.0

TABLE VII

APPLIED AND NONAPPLIED STUDY PREFERENCES AMONG MERIT SCHOLARS AT BEGINNING AND END OF FRESHMAN YEAR IN COLLEGE

Major Field of Study	Preference at			
	Beginning of College		End of Freshman Year	
	N	Per Cent	N	Per Cent
Applied field	209	39.0	185	34.5
Academic or "pure" science field	316	58.9	322	60.1
Undecided*	11	2.1	29	5.4
Totals	536	100.0	536	100.0

* Numbers of "undecided" respondents in Tables VI and VII do not agree since the two classifications are independent. For example, a student may have decided to major in some scientific field, although he remains undecided whether to enter an applied or nonapplied field

time in a thousand in sampling a population in which no change had occurred. It is apparent that Merit Scholars tend to move away from applied fields during the freshman year. It will be interesting to follow these students through college and to determine how stable their career preferences turn out to be.

History is the strongest recruiter of new students among Scholars changing their field of study: 12 per cent of the "changers" intend now to study history and half of these were formerly in scientific fields of study. About 9 per cent are going into mathematics. English or literature, government or political science, and physics each recruited 7 per cent. Philosophy attracted 6 per cent.

DISCUSSION

In view of their extreme intellectual attainments it is perhaps not surprising to find that most of the changes in study plans among Merit Scholars are from applied to nonapplied fields. However, the tendency for Scholars to move from scientific to nonscientific fields was unexpected. This trend may be due to the fact that some high school students not really interested in science are being recruited by current efforts to increase the supply of engineers and scientists. The hope of winning a scholarship may also play a role in entering nonpreferred fields of study: a student seeking assistance may feel his chances of success are better in the present scholarship market if he proposes to enter a scientific field of study. Other possible interpretations will

occur to the reader: perhaps the quality of undergraduate science teaching is inadequate, or perhaps nonscience undergraduate teaching is relatively more stimulating or is far superior to what the student has been accustomed to in high school.

The present results suggest the importance of undertaking new research to identify those students whose college-going behavior will be most affected by scholarships. Although retrospective evaluations of the effects of receiving scholarships are difficult to evaluate, it does not appear that scholarship awards to the present sample of talented students has appreciably increased the number going to college. The prediction of "responsiveness" to scholarships is clearly a critical research area. More precise information is required about variables which interact significantly with scholarship assistance in terms of effects on the college-going behavior of the talented. Interaction effects of this kind would be useful in selection, for such information would indicate which students are likely to be most responsive to scholarship assistance. More definitive studies involving matched groups of Scholars and non-Scholars are now in progress, which should identify characteristics of responsive recipients.

While such studies can undoubtedly improve present methods of selecting recipients, we should at the same time be realistic in our expectations. College-going behavior is clearly the result of many decisions extending over the years; it may not be dramatically responsive to scholarship aid which is in the nature of a windfall in the senior year of high school. The Educational Policies Commission has noted that "the economic barrier to advanced education and professional careers rarely represents itself suddenly at a critical moment of decision" (4, p. 24). In the same vein Berdie argues that in order for scholarship programs to increase materially the number of qualified students attending college "*such programs should take into consideration not only the making available of funds, but also the creating of the desire to attend college.* Scholarship programs might well be announced to high school students long before the senior year, perhaps while the students are still in junior high school" (2, p. 81) (author's italics).

There is not only a need therefore to obtain more direct behavioral evidence of the effectiveness of scholarships as means of increasing college attendance; it is also desirable to plan for a continuing program of evaluation in which the cumulative effects of scholarship aid

and increased familiarity and understanding of scholarship opportunities among students, teachers, and parents can be assessed.

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Reprinted from
College and University
Fall, 1958